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EVALUATION OF MOUNTAIN PINE BEETLE INFESTATIONS ON THE LINCOLN DISTRICT, HELENA NATIONAL FOREST, MONTANA

U.S. DEPARTMENT OF AGRICULTURE - FOREST SERVICE
Division of State and Private Forestry
Northern Region

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EVALUATION OF MOUNTAIN PINE BEETLE INFESTATIONS ON THE LINCOLN DISTRICT, HELENA NATIONAL FOREST, MONTANA

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ABSTRACT

Epidemic populations of mountain pine beetle, Dendroctonus ponderosae Hopk., were detected in ponderosa pine stands in four drainages on the Lincoln District, Helena National Forest. Aggressive control action is recommended for the Park, Liverpool Creek, and Lincoln Gulch infestations. The Wasson Creek infestation is experiencing a declining trend. Infested trees should be removed by commercial sales.

INTRODUCTION

Infestations of the mountain pine beetle, Dendroctonus ponderosae Hopk., were detected in Lincoln Gulch, Lincoln District, Helena National Forest, in 1969. Control measures were initiated in this area shortly after they were detected. Aerial detection surveys conducted during August 1970 by the Forest Insect and Disease Branch of the Division of State and Private Forestry revealed additional epidemic populations of mountain pine beetle in Park, Liverpool, and Wasson Creek drainages, and continued infestations in Lincoln Gulch. An evaluation of these infestations was conducted October 1, 1970, to determine their current status and potential for additional losses in 1971. H. Meyer, Insect and Disease Branch, assisted with the field observation.

METHODS

Ground surveys of epidemic areas on the District were conducted by District personnel. One-tenth-acre plots were established at 3-chain intervals on a series of survey lines 5 chains apart. Estimates of the number of actively infested trees were obtained from these data.

Ten ponderosa pines attacked in 1970 were randomly selected in each of the three drainages for brood sampling. Two 6- by 6-inch samples were taken from each tree at breast height to estimate mountain pine beetle brood density, attack density, and occurrence of natural enemies.

RESULTS

Ground surveys by District personnel revealed an estimated 2,500 trees occurring on 2,000 acres of mixed ponderosa pine, lodgepole pine, and Douglas-fir forest. Ponderosa pine was the preferred host, and lodgepole pine was attacked only when it occurred in association with ponderosa pine.

Brood counts indicate a potential for additional losses in Park and Liverpool

Creek; however, a decline of activity is predicted for Wasson Creek (table 1). The latter prediction is based on a relatively low brood density and ratio of increase in the Wasson Creek drainage.

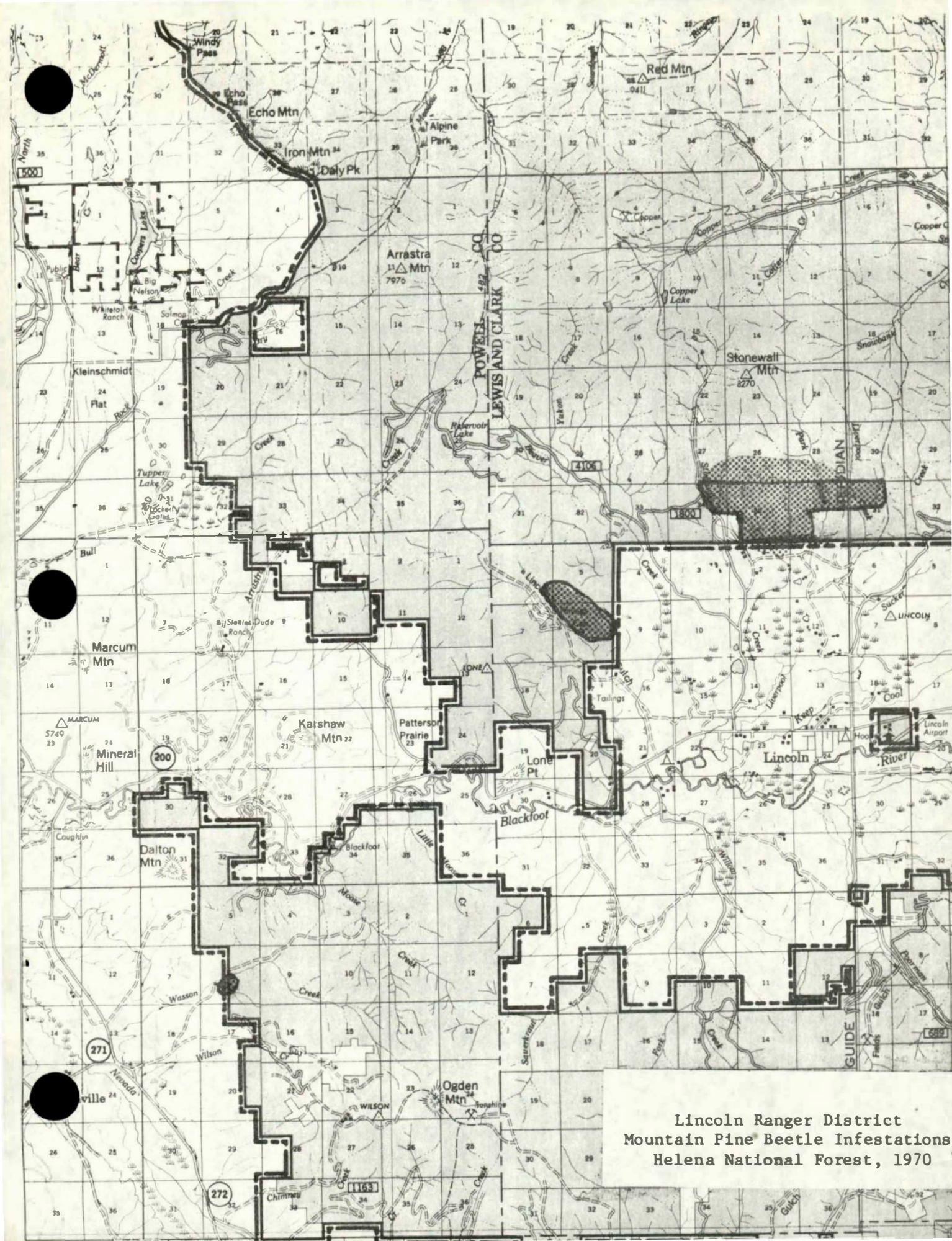
Table 1.--Summary of brood density and ratio of increase for mountain pine beetle infestations, Lincoln District, Helena NF, October 1970.

Drainage	No. trees sampled	Mean d.b.h.	Brood Density/ sq. ft.	Attack Density/ sq. ft.	Ratio of increase (Parent adult:Brood)
Park Creek	10	11.3	109.6	23.2	1:4.7
Liverpool Creek	10	13.0	125.0	24.0	1:5.2
Wasson Creek	10	13.7	56.0	23.8	1:2.1

Predaceous insects, particularly Medetera sp. were commonly associated with mountain pine beetle broods. These should reduce the brood density to some degree before emergence occurs next summer.

DISCUSSION AND RECOMMENDATIONS

Mountain pine beetle infestations are presently at epidemic level in Park, Liverpool Creeks, and Lincoln Gulch. From an entomological standpoint, control action is necessary to reduce potential losses in 1971. Infested trees should be removed by commercial sales wherever feasible. This will significantly reduce control costs and, to some extent, recover losses incurred in 1970. Infested unmerchantable trees should be cut and burned. The Wasson Creek infestation is declining. If possible, infested trees should be removed by commercial sale, but cutting and burning is not recommended.



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